

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MELTON C. BOST, ROBERT A. GASSER,
SHI-NING YANG and TIMOTHY L. DEETER

Appeal No. 96-1508
Application No. 08/112,445¹

ON BRIEF

Before KRASS, LEE and CARMICHAEL, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

¹ Application for patent filed August 26, 1993. According to appellants, this application is a division of Application 07/799,556 filed November 27, 1991, now U.S. Patent No. 5,270,256 issued December 14, 1993.

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This is a decision on appeal from the final rejection of claims 27 through 50, all of the claims pending in the application.

The invention is directed to a guard wall for reducing delamination effects in a semiconductor die.

Representative independent claim 27 is reproduced as follows:

27. A semiconductor die comprising:

a semiconductor substrate;

an electrically active region on the substrate;

a patterned dielectric layer over the substrate and the electrically active region; and

a guard wall extending through the dielectric layer, the guard wall lying adjacent to the electrically active region, the guard wall disposed in a guard wall opening in the dielectric layer, the guard wall opening having a main section and a plurality of cross sections, the guard wall including at least one sidewall spacer along the main section of the guard wall opening and a filling material.

The examiner relies on the following references:

Yasunari 1982	4,317,274	Mar. 2,
Kosonocky 1, 1983	4,375,597	Mar.
Lee 1987	4,641,420	Feb. 10,

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Anantha et al. (Anantha) 8, 1987	4,691,435	Sep.
Japanese kokai patent ² 1989 (Kawasaki)	64-69051	Mar. 15,
British patent (Mihara) 1991	2,240,427	Jul. 31,

Claims 27 through 50 stand rejected under 35 U.S.C. 103 as unpatentable over Anantha and Kawasaki. Claims 27 through 32 and 36 through 42 stand further rejected under 35 U.S.C. 103 as unpatentable over Yasunari in view of Lee and Mihara.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

At the outset, we note that, in accordance with appellants' statement at page 5 of the principal brief, all claims stand or fall together.

We reverse.

² Our understanding of the Kawasaki reference is based on an English translation thereof prepared by the United States Patent and Trademark Office. A copy of that translation is attached hereto.

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We agree with the examiner that certain arguments by appellants are not commensurate in scope with the claimed subject matter. For example, while appellants argue [page 6 of the principal brief] that nothing in Anantha and Kawasaki teaches "...to improve adhesion and reduce tensile stress of sidewall spacers, and reduce delamination effects on the dielectric layers," nothing in the instant claims requires such improvements.

Even so, we will not sustain either of the rejections under 35 U.S.C. 103 because the applied references are clearly not directed to the claimed subject matter nor would the claimed subject matter have been obvious thereover within the meaning of 35 U.S.C. 103.

The instant claims are directed to a "semiconductor die" which comprises certain elements. The examiner has not pointed out where the applied references teach or suggest such a "die."

Moreover, the instant claims all require the physical structure of a "guard wall." This guard wall is adjacent the electrically active region and is disposed in an opening in the dielectric layer, said opening having a main section and a

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plurality of cross sections. The guard wall includes at least one sidewall spacer along the main section and a filling material.

Taking Anantha with Kawasaki, these references deal not with a physical "guard wall" structure but, rather, with a guard ring 6 in Anantha which is diffused into epitaxial layer 2 in order to improve electrical performance of a Schottky barrier diode or with a guard ring region 3 in Kawasaki which also appears to constitute a diffused region which aids in the electrical performance of a Schottky barrier diode. Neither of these "diffused" regions is seen to be equivalent to, or obvious variations of, the physically separate "guard wall" of the instant claimed invention. The "structures" are completely different and it is indeed difficult to see how a skilled artisan would have arrived at the instant claimed subject matter from any combination of Anantha and Kawasaki.

Similarly, with regard to the Yasunari, Lee and Mihara references, these references also do not teach or suggest any "guard wall," as set forth in the instant claims. The guard ring contact region 23 and the guard ring region 25 of Yasunari, identified by the examiner as corresponding to the

claimed "guard wall" are not guard walls at all, but, rather are diffused regions in the semiconductor device of Yasunari. Lee, employed by the examiner for its teaching of certain contact holes and the notoriety of aluminum for not forming continuous layers over sidewalls, is not seen to remedy the deficiency of the primary reference. Similarly, the examiner's identification of Mihara's teaching of a guard ring, shown in Figure 9 as a mask pattern having "cross sections" also does not provide for the deficiency of Yasunari.

Since the guard rings of the applied references are all diffused regions, which, by our understanding, are physically inseparable from the substrates into which they are diffused, such diffused regions, or guard rings, cannot reasonably be considered to be equivalent to the claimed guard wall since the diffused regions cannot constitute "filling material," as claimed. Further, a diffused region would not have a "guard wall opening" since there was no opening in a dielectric layer which was filled but, rather, a diffusion of one material into another. Accordingly, although similar in name, we do not find the "guard rings" disclosed by the applied references to

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be equivalent or obvious over the "guard wall" set forth in
the instant claims.

The examiner's decision rejecting claims 27 through 50
under 35 U.S.C. 103 is reversed.

REVERSED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	
)	BOARD OF PATENT
JAMESON LEE)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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